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News

The Baltic Sea, the food we eat, and what all this means

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If you thought your health and well-being are the only things affected by what you eat, think again. New research from Finland shows how you can help mitigate the burden and risks triggered by hazardous substances found in the food supply chain, by choosing the right foods and following dietary guidelines. Researchers from the Foodweb project, coordinated by MTT Agrifood Research Finland, put the spotlight on the Baltic Sea, saying the food supply chain is playing havoc with this body of water. Conversely, the hazardous substances accumulated in the marine ecosystem can also increase our risk of consuming unsafe foods.

The Foodweb partners generated information on the environmental load of varied foods and the environmental risks associated with them. This helps shed light on the foods that should be chosen for consumption.

The researchers investigated the effects of the food supply chain on the Baltic Sea. They paid particular attention to the production and consumption of food in the central Baltic Sea region.

The culprit triggering most of the nitrogen and phosphate load in the Baltic Sea is primary production, while animal feed production is chiefly responsible for eutrophication, taking up more than 50% of the arable land area in the region.

Meat and milk production are responsible for the biggest share of the burden, says MTT Agrifood Research Finland senior research scientist Yrjö Virtanen. The nitrogen load of beef has usually been measured at between 30 grams and 50 grams of nitrogen per 1 kilo of beef in life-cycle assessments.

'The assessment in this study was based on a model of the entire food supply chain,' Dr Virtanen says. 'It shows that the nitrogen load of 1 kilo of beef is 78 grams.'

The team found that the nitrogen produced in pork and egg production is around 33%, while the amount in poultry production is about one-seventh of that in beef production.

The production chains of one kilo of grain or one litre of milk only produce about one-fifteenth of the nitrogen load in beef production. For one kilo of potatoes, the nitrogen load is only one-hundredth compared to that of beef, according to the researchers.

For the phosphorous load, the production chain of one kilo of pork generates around one fourth of the phosphorous load from the production chain of one kilo of beef. Poultry and eggs cover about a tenth and milk is about one-fifteenth compared to beef. It should be noted variations exist in the data from country to country, based on how efficiently nutrients are used.

Choosing the right foods could lead to a drop in eutrophication. 'By following the national dietary guidelines we can decrease the load caused by agriculture by about 7%,' says Virpi Vorne, also from MTT Agrifood Research Finland.

For his part, Finnish Environment Institute chief scientist Matti Verta says: 'When eating fish from the Baltic Sea, recommendations should be followed. Fish should be eaten once or twice a week, but there should be variation in the fish species, just to be on the safe side. According to the recommendations of the Finnish Food Safety Authority, people in fertile age, small children and pregnant women should not eat large Baltic herrings, salmon or trout caught from the Baltic Sea more than once or twice a month. But the Baltic Sea is not the only risk source. Hazardous substances gathered from elsewhere in the environment and created when the food is being prepared can also accumulate in what we eat.'

Food producers and consumers should rise to the challenge of helping mitigate this problem by increasing harvests and encouraging the ecology efficiency of nutrient use, according to Professor Sirpa Kurppa, MTT Agrifood Research Finland researcher.

'Consumers should be aware of the most significant challenges in the production chain in their own country,' Professor Kurppa remarks. 'Consumers and the production chain could join forces to significantly reduce the nutrient load in the Baltic Sea.'

Experts from the Finnish Environment Institute (SKYE), the University of Tartu and the AHHA Science Centre in Tartu, Estonia, and the University of Latvia contributed to this study.

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